LEPROSY

Leprosy is also called *Hansen's disease*. It is a chronic infectious disease caused by *Mycobacterium leprae*, an acid-fast, rod-shaped bacilli. The disease mainly affects the skin, the peripheral nerves, mucosa of upper respiratory tract. It also affects the eyes, muscles, bones and testes. Of all the communicable diseases, leprosy is the most important for its *potential to cause permanent and progressive physical disability.*

Magnitude of the Problem in India

About 75% of leprosy cases in the world are found in India itself.

1. Prevalence of leprosy in India is 5.3 per 10000 population (i.e., 5,30,000 cases are present in India).
2. Incidence of leprosy cases in India is 4 lakhs.
3. Case detection rate is 1 per 10000 population. Because of poor case detection rate, the elimination of leprosy is becoming a difficult task.
4. There are about one million leprosy patients with disability.
5. 15% of case are children below 15 yr.
6. Infectious cases are 15% to 20%.
7. The target for elimination of leprosy is to bring down the leprosy cases to a level of 1 per 10000 population.
8. Highest prevalence seen in Tamil Nadu, Andhra Pradesh, Orissa, Rajasthan.

Diagnosis of Leprosy

Diagnosis of leprosy is most commonly based on the following cardinal signs and symptoms:

1. The first cardinal sign is *hypopigmentation or reddish skin lesion(s) with definite loss of sensation*. The first sensation lost is light touch.
2. Second cardinal sign is *the involvement of peripheral nerves, as demonstrated by definite thickening with loss of sensation and weakness of the muscles of hands, feet and face.*

Scanned with ACE Scanner

3. Diagnostic is *demonstration of acid-fast bacilli in the skin or nasal smear.*

Signs of advanced disease are:

1. Presence of nodules or lumps in the skin of face and ears
2. Plantar ulcer and loss of fingers or toes
3. Nasal depression
4. Foot drop, claw toe, other deformities.

Epidemiology

1. **Agent factors**
   a) **Agent**: *Mycobacterium leprae*—It is acid-fast bacilli. It is both extracellular and intracellular. They are always found in cigar-shaped bundles or globi; they never appear singularly like *Mycobacterium tuberculosis*. Bacterial load is high in lepromatous cases (2.7 billion organisms per one gram of leproma).
   b) **Source of infection**: Multibacillary cases (lepromatous and borderline lepromatous) are most infectious sources of infection. Subclinical cases (or inapparent infections) are another important source of infection. So all active cases must be considered infectious (including tuberculoid cases). Outside the human body the organisms remain alive up to seven days depending on the favourable conditions (like humidity, poor lighting, warmth etc.).
   c) **Portal of exit**: Nose is the main source of exit for the organisms (through sneezing or blowing of nose). This can exit through ulcerated skin or broken skin, sebum, hair follicle and breast milk.
   d) **Portal of entry**: Transmission is by droplet infection. So respiratory tract is one of the routes of entry. Skin is another portal of entry. Tattooing of skin and insect bite may sometimes be considered as portal entry.
   e) **Infectivity**: The organisms are highly infectious but of low pathogenity.
   f) **Attack rate**: 4% to 12% of household contacts is expected to get diseases in 5 years.

Scanned with ACE Scanner

2. **Host factors**:
   a) **Age and sex**: Previously it is believed that it is a disease of children (i.e., from seven months to seven years of age). But now it is believed that it can affect any age group. It is slightly more in males (M:F ratio is 2:1).
   b) **Genetic factor**: There is no role of genetic factors in the causation of disease. But it is observed that blacks are more prone to get leprosy

Scanned with ACE Scanner

than other races. So there may be some genetic predisposition to get the disease in negroes (blacks) or skin pigmentation may have some role in causation of disease.

c) **Immunity (mainly CMI)**: Because of cell-mediated immunity a large proportion of early lesions will heal spontaneously and subclinical cases are also common. The people will get resistance to leprosy due to this subclinical infections.

3. **Environmental factors**:
Usually leprosy bacilli can survive outside the body up to 7 days. In moist soil, room temperature they may survive up to 45 days. Leprosy is more common is rural areas, but large number of cases are seen in urban areas due to migration of cases from rural to urban areas.

Mode of Transmission

1. It is mainly airborne infection through droplet.
2. Contact transmission
   a) Direct skin to skin contact
   b) Indirect contact with soil fomites (where the organism is surviving)
   c) Other routes: through breast milk, lepromatous mother to child; insect vectors, tattooing of skin.

Incubation Period (also called latent period)

3–5 years (may be as small as six months or as long as thirty years).

Classification of Leprosy

Leprosy can be classified on the basis of:
1. Skin smear examination
2. Clinical manifestations.

In classification based on skin-smear examination: patient showing negative smear at all sites are grouped as pauci-bacillary leprosy (PBL) While those showing positive smear at any site are grouped as having multibacillary leprosy (MBL). So any patient showing a positive skin smear, irrespective of the clinical classification should be treated with MDT regimen.

Scanned with ACE Scanner

Prevention and Control of Leprosy

1. Primary prevention
    a) Health promotion
    b) Specific protection
2. Secondary prevention
    c) Early diagnosis and treatment
3. Tertiary prevention
    d) Disability limitation
    e) Rehabilitation

Scanned with ACE Scanner

e) **Rehabilitation:**

Medical Rehabilitation: The purpose of medical rehabilitation is:

i) To prevent contractures

ii) To strengthen weak muscles

Both the above aims can be achieved by doing exercises.

There are two types of excercises.

i) Active exercises: Here the patient exercises his weak muscles. This will prevent contractures and strengthen weak muscles.

ii) Passive exercises: Here the patient is helped to move his paralysed parts. This will prevent contracture, but cannot strengthen the weak muscles.

These exercises are useful for:

i) Ulcer nerve weakness or paralysis

ii) Median nerve weakness or paralysis

iii) For foot drop.

Rehabilitation measures are: Medical, surgical, social, educational and vocational etc.

Definition of rehabilitation (defined by WHO): *The physical and mental restoration, as far as possible of all treated patients to normal activity, so that they may be able to resume their place in the home, society and industry.*

Scanned with ACE Scanner

National Leprosy Eradication Programme

The NLCP (National Leprosy Control Programme) was started in 1954-55. The mainstay of NLCP was the early detection and sustained regular treatment of patients with dapsone monotherapy. However dapsone monotherapy has certain limitations such as poor compliance due to the prolonged duration of the treatment and the emergence of dapsone resistance.

In 1982 when MDT was introduced, the National Leprosy Eradication Programme (NLEP) was launched. The World Health Organisation in 1991 resolved to eliminate leprosy as a public health probelm by the year AD 2000, thereby reducing the prevalence of it to one or less than one per 10,000 population. This goal has been taken up by the NLEP.

Under this programme responsibility of health services is fixed as:

1. Detection of leprosy as early as possible.
2. Giving correct treatment.
3. Educate the patient how to prevent the disabilities.

Supervision of the Programme

It is a way of ensuring support and guidance to the staff to enable them to perform their duties effectively. For this the supervisor should be able to identify the problems. This is done through review during field visits, during monthly meetings and review of reports.

Assessment of the Progress of the Programme

1. The strategy of NLEP is early case detection, prompt treatment with MDT and prevention of disability among patients.
2. Continuous collection of data is required and monthly progress report should be sent.

Maintenance of Records and Reports

The records that have to be maintained at PHC level are:

1. Treatment register
2. Individual case records
3. A suggested format for annual and monthly reports.

Indications Used for Assessing the Progress of the Programme

A indicator is a calculation, which is used to measure progress implementation of various activities.

Scanned with ACE Scanner